QUALITY ASSURANCE PLAN

for

Environmental Restoration Group, Inc.

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INTRODUCTION

Environmental Restoration Group, Inc. (ERG) is engaged in providing environmental services. ERG is primarily involved in site characterization work, preparing planning documents, and supporting the remediation of radiologically contaminated sites.
ERG does not do design work.

This document provides guidance to ERG management and staff who are responsible for continuously improving and implementing the QA program for quality-affecting project work. This program is written to comply with the requirements of Part 10 Code of Federal Regulations (CFR) Subpart 830.120, *Quality Assurance* (the Rule). Each section of this plan is introduced by its corresponding Rule criterion, followed by the applicable requirements and references to the implementing ERG Standard Operating Procedures (SOP). ERG Series 4 Standard Operating Procedures were written to support this plan and are included in Attachment 1. A listing of all other ERG Technical Standard Operating Procedures is provided in Attachment 2.

SECTION 1: PROGRAM

A written Quality Assurance Program (QAP) shall be developed, implemented, and maintained. The QAP shall describe the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing the work. The QAP shall describe management processes, including planning, scheduling, and other resource considerations.

1.1 PLANNING FOR QUALITY

Quality can be achieved through a systematic approach to work that includes four successive elements: plan, do, check, and act. The expectation of continuous quality improvement is an integral part of this approach. Planning is a key element and is performed to provide a clear definition of how programmatic and operational responsibilities and requirements will be achieved.

The actual degree of applicability or rigor applied to requirement compliance (the graded approach) is a management determination detailed in specific activity planning documents. The extent to which QA requirements are applied to specific activities depends on an activity's level of impact on quality.

The following factors, at a minimum, are used to determine the extent to which an activity affects quality:

- Health and safety of personnel
- Health and safety of the public
- Protection of the environment
- Consequence of item or process failure
- Importance of data
- Complexity of function
- Reliability of function
- Reproducibility of results
- Uniqueness of product
- Degree of item or process standardization
- Necessity of special controls or processes
- Significance to statutory regulatory requirements

1.2 ORGANIZATIONAL STRUCTURE

The ERG organizational structure is appropriate for a small company with a few employees where it may be necessary for a person to serve in more than one capacity. The authorities, responsibilities, and duties of the personnel performing activities affecting quality are described below.

1.3 ORGANIZATION RESPONSIBILITIES

The organization responsibilities for quality-affecting project activities are clearly established in this plan, in procedures, and in detailed work instructions designed to obtain the following results:

- That project management establishes and directs a program to achieve, maintain, and improve quality in meeting performance objectives.
- That operations are conducted and quality is achieved, maintained, and improved by those assigned responsibility for performing work, including those checks, tests and inspections, management assessments, and other evaluation techniques used to give personal and management confidence in results.
- That achievement, maintenance, and improvement of quality are independently verified by personnel not responsible for performing the work.

1.3.1 Operations Manager

The Operations Manager has overall responsibility for development and oversight of the project QA program and for approving this plan. The Operations Manager shall resolve differences of opinion between project QA personnel and other project organization. The operations manager provides leadership and allocates appropriate resources for implementing the QA program, including the following responsibilities:

- Establishes and defines overall goals, objectives, and policies.
- Directs and oversees the implementation of the QA program.
- Provides leadership in strategic planning and approves planning documents.
- Fosters an atmosphere conducive to continuous improvement of quality.
- Establishes and participates in internal reviews and accommodates external assessments of the effectiveness of the QA program.
- Obtains and maintains all required QA documentation for the project.

1.3.2 QA Manager

The QA Manager is functionally independent of any group or individual directly responsible for the activities that he monitors. He has the authority and organizational freedom to enforce QA requirements; identify quality problems; and initiate, recommend, or provide solutions to QA problems. He also verifies the implementation of the solutions and assures that further processing, delivery, installation or use is controlled until proper disposition of any non-conformance, deficiency, or unsatisfactory condition has occurred. The QA Manager is responsible for auditing, inspecting, and testing project operations as required. The QA Manager also has the following responsibilities:

- Verify that participating suppliers have approved QA programs and procedures, as required.
- Approve QA program plans of participating suppliers.
- Assure that project design documents contain applicable QA requirements.
- Approve quality-affecting procurement documents, instructions, procedures, and drawings for inclusion of quality requirements.
- Assure that further processing, delivery, installation, or use of non-conforming items is controlled until proper disposition has occurred.
- Perform audits to verify that QA requirements are being met.

1.3.3 Project Manager

Project Managers directing project work should be accountable for the quality of their products and activities. Specific responsibilities with respect to quality include:

- Define organizational and activity-specific work, goals, objectives, schedules, milestones, etc.
- Determine activities for which planning documents need to be prepared.
- Submit for operations manager approval planning documents prepared for activities in their areas of responsibility.
- Ensure that conditions identified as adverse to quality are corrected promptly.
- Conduct management assessments and promote self-evaluation of work activities within their areas of responsibility to ensure that QA requirements are being effectively implemented.
- Ensure that resources to meet quality commitments and needs are available.

- Promote quality principles and attitudes.

1.3.5 Project Staff

Staff members performing project activities that affect quality are responsible for planning, achieving, assuring, and improving quality in the performance of their work. This includes appropriate qualification, training, and proficiency; ensuring that requirements for their assigned tasks are documented and complied with, and ensuring that quality deficiencies and opportunities for improvement are promptly reported and addressed. Staff members are accountable to the Project Manager in the performance of the following duties:

- Actively participate in work planning and readiness preparations as required.
- Execute work activities consistent with the requirements of the applicable plans and procedures.
- Perform work to ensure that required actions are carried out to achieve quality objectives.
- Identify potential conditions adverse to quality and stop work if the condition could become a hazard to workers, the public, or the environment.
- Identify opportunities for quality improvement.

1.4 QA PROGRAM MANAGEMENT AND INTEGRATION

General requirements and responsibilities specific to the project QA program are broadly described herein. Greater detail is provided in procedures. All project subcontractors, vendors, consultants, or others performing or contributing to project activities shall be required to abide by the provisions of this plan or to equivalent QA programs of their companies, which have been approved by the QA Manager. The Project Manager has overall responsibility for project quality and regulatory compliance. Management, at all levels, has direct responsibility for quality achievement (i.e., accomplishing project goals), quality assurance (formal planning of, controlling, and verifying activities), quality management (managing activities consistent with quality philosophy and quality principles), and quality improvement (continuously striving for betterment) within their areas of responsibility.

1.4.1 Quality Assurance Policies, Goals, and Objectives

It is the policy of ERG that all activities governed by the Code of Federal Regulations, licenses, contracts, or other regulatory requirements, shall be conducted in accordance with written approved procedures that incorporate the regulatory requirements. Quality related activities shall be performed with specified equipment under suitable environmental conditions and prerequisites shall be satisfied prior to inspection, operation, or testing. Adherence to the procedure requirements is mandatory for all ERG employees.

It is ERG's goal and objective to provide a reliable QA Program for all activities that affect quality or public health and safety, or are specified by a regulatory or contractual requirement. This goal and objective is achieved through the use of written procedures, management memoranda, and management/staff meetings designed to evaluate the effectiveness of this program.

1.4.2 Implementing Procedures

Implementation of this plan is accomplished through approved written procedures. In general, the applicable ERG procedures will be used to perform project work and are referenced herein where appropriate. The QA Manager is responsible for developing and approving any project-specific procedures for activities that may not be adequately covered by existing ERG procedures.

1.5 DELEGATION OF MANAGEMENT AUTHORITY

Management at any level may delegate assigned QA program tasks as appropriate and warranted; however, whenever possible, the operations manager and other line management should actively participate in the QA program. Delegation of task performance should not abrogate personal management responsibility for the achievement of quality.

1.6 STOP WORK RESPONSIBILITY AND AUTHORITY

All project personnel shall be responsible for stopping any and all work they determine to be a hazard to the health and safety of workers or the public or to cause environmental damage. Project personnel also shall be responsible for identifying and reporting practices or conditions that are or may be unsatisfactory as they relate to the QA requirements. Managers shall have the responsibility of assessing unsatisfactory or potentially unsatisfactory practices or conditions and taking appropriate action, including stopping work. In all cases, these responsibilities shall override planning and scheduling considerations.

SECTION 2: PERSONNEL TRAINING AND QUALIFICATION

Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained.

2.1 POSITION REQUIREMENTS AND SELECTION

The minimum educational, experience, and other initial qualification requirements for positions involved in the performance of project quality-affecting activities shall be established commensurate with the job functions associated with those activities. Project-specific qualification requirements shall be established for ERG personnel and, when appropriate, for subcontractors or consultants.

2.2 ORIENTATION AND TRAINING

Personnel performing activities affecting quality are trained and indoctrinated as to the purpose, scope, and proper implementation of the QA program, the specific QA requirements, and the project procedures to assure proficiency for the tasks that they are to perform. The proficiency of personnel performing project activities affecting quality is maintained through a program of on-the-job training when applicable and indoctrination meetings as required. The QA Manager is responsible for the training of individuals performing these functions if required.

Before beginning quality-affecting activities, and subsequently thereafter as significant QA program changes occur, personnel shall receive an orientation on the project QA program. This orientation shall include a general introduction to the purpose, scope, implementation, and applicability of the QA program.

Appropriate general and project-specific environment, safety, and health (ES&H) training shall be provided to all personnel. Project-specific training shall include instruction in the procedural or administrative requirements of planning, performing, documenting, and checking assigned activities. Training assignments should be based on a supervisory analysis of individual personnel needs.

Training may consist of formal classroom sessions, reading assignments, hands-on workshops, and other applicable training methods or combinations of methods, as appropriate to the situation and the individual trainee. Training shall be upgraded when requirements are revised or other improvements are identified.

2.3 PERSONNEL CERTIFICATION

Personnel responsible for performance, inspection, and control of special processes and operations that require special skills and have an effect upon quality shall be certified. Personnel for these processes or operations shall be trained and qualified in accordance with the codes and/or standards applicable to the process. Inspection results and quality audits shall be used as indicators of the need for additional training. A record of the names of certified personnel, their skills, and certification periods shall be maintained.

2.4 PROFICIENCY EVALUATION

Immediate supervisors shall continuously monitor (maintain awareness of) personnel proficiency in understanding their job requirements, competently performing their assigned quality-affecting tasks, and progressively improving their capabilities. Formal evaluation of proficiency should be documented as part of the usual performance appraisal process. If an individual's level of proficiency is unsatisfactory, project supervisors should, in addition to standard personnel actions, suspend the applicable job task, counsel the individual, and assign appropriate training or professional development.

2.5 IMPLEMENTING PROCEDURES

ERG SOP 4.01 Training, Indoctrination, and Certifying Personnel

SECTION 3: QUALITY IMPROVEMENT

Processes to detect and prevent quality problems shall be established and implemented. Items, services, and processes that do not meet established requirements shall be identified, controlled, and corrected according to the importance of the problem and the work affected. Correction shall include identifying the causes of problems and working to prevent recurrence. Item characteristics, process implementation, and other quality-related information shall be reviewed and data analyzed to identify items, services, and processes needing improvement.

3.1 PROBLEM PREVENTION, CORRECTION, AND CONTINUOUS IMPROVEMENT

The principal objective of a QA program is to establish, implement, and continuously improve quality requirements that help ensure high performance and ES&H risks and impacts are minimized through effective management. This is achieved by implementing management controls and continually seeking out and acting upon improvement ideas. Project processes shall be developed and implemented that ensure the prompt identification, disposition, tracking, trending, cause analysis, and lessons learned of project quality problems and improvement opportunities.

3.1.1 Nonconforming Items or Services

If items or services are found to be in non-conformance with specifications or subcontract requirements, the following actions shall be taken:

- For items, the inspector attaches a reject tag to the non-conforming item and segregates it from accepted items where practical.
- For services, the manager identifying the non-conformance requests that the QA Manager formally notify the contractor and request corrective action.

The QA Manager or his designee shall issue a non-conformance report for either case. The report indicates the reason for the non-conformance and recommended corrective action, if any, and provides follow up verification of the corrective action.

3.1.2 Subcontractor Control

Subcontractors shall promptly notify the ERG Project Manager and QA Manager of all deviations from the procurement requirements, such as deviations from the required codes or approved drawings. The subcontractor, in accordance with the subcontractor's QA program, shall cease further fabrication or operations on the affected item or service until the

nonconformance has been resolved. The subcontractor shall supply records of nonconformance report disposition of “accept as is” or “repair.” These reports shall be made part of the contract records and forwarded to the ERG QA Manager for review and assessment.

3.1.3 Verification of Rework or Repair Acceptability

Acceptability of services rework or item rework or repair of materials, parts, components, systems, or structures shall be verified by review, inspection, and/or testing the service or item to the original criteria, or by a method which is at least equal to the original inspection and testing method. Review, inspection, testing, rework, and repair records shall be documented and filed in ERG project quality records files.

3.1.4 Nonconformance Disposition

The individuals or groups identified on non-conformance reports shall have the responsibility and authority for disposition of non-conforming items. Project QA is responsible for reviewing, approving and verifying the disposition of non-conformances.

3.1.5 Assessment of Non-conformances

Non-conformance reports shall be analyzed periodically by Project QA to show quality trends and the results reported to the Project Manager for review.

3.2 CORRECTIVE ACTION

Conditions adverse to quality (i.e., non-conformances, failures, malfunctions, deficiencies, deviations, defective materials, etc.) shall be evaluated to determine the need for corrective action in accordance with established procedures. Corrective action shall be promptly initiated when it is determined that an existing non-conformity in a material, a process, or a product is due to an assignable cause and is repetitive in nature.

The corrective action process shall include:

- Investigation of the discrepancy,
- Determination of root cause,
- Identification of corrective action to be taken,
- Tracking of corrective action implementation, and
- Evaluation of the corrective action results.

The appropriate person within the project organization shall be assigned the responsibility for a corrective action. Corrective action includes, but is not limited to, procurement or manufacturing operations, design, construction, and operation. The results of a corrective action shall be documented. Project QA shall review applicable records to verify proper implementation of corrective actions. Effectiveness of corrective actions shall be continuously monitored as a function of quality surveillance. Significant conditions adverse to quality, the root cause of such conditions, and the corrective action taken shall be reported to Project Manager for review.

When corrective action requests affect a project vendor, the vendor shall be required to provide the following information:

- A description of factors contributing to the deficiency,
- A description of corrective actions taken to prevent recurrence of the discrepancy in future production.

3.3 IMPLEMENTING PROCEDURES

ERG SOP 4.02 Nonconformance and Corrective Actions

SECTION 4: DOCUMENTS AND RECORDS

Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained.

4.1 DOCUMENT CONTROL

Documents that specify project QA program requirements or prescribe quality-affecting activities shall define document control measures to assure adequate review, approval, release, and distribution of original documents and subsequent revisions. These documents may include but are not limited to design specifications, drawings, procurement documents, and special process, test, operating procedures, and instructions. The persons, groups, and/or organizations responsible for reviewing and approving documents and their revisions for that project shall be identified in the implementing procedure.

4.1.1 Document Changes

Changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval. Approved changes are included in the applicable drawings, procedures, instructions, or other documents prior to the implementation of the change.

4.1.2 Document Availability

The latest revision of documents shall be available at the location where activities affecting quality are performed prior to commencing the work.

4.1.3 Vendor Documents

Document control for vendors shall be handled as follows;

- Subcontractors and vendors shall maintain an effective drawing control system when drawings are provided for the project as part of the contract requirements.
- Procurement of articles to project design requires a document control system that includes assurance of notification of changes to the subcontractor or vendor, verification of change incorporation, and appropriate identification of those items on which the change is incorporated.
- Procurement of articles of subcontractor's design requires a document control system that assures subcontractor notification of the project of the proposed change, approval of the change by the project, and appropriate notification of the items on which the change is incorporated.

4.1.4 Procurement Documents

Procurement documents shall assure that applicable regulatory requirements, design basis, and other requirements necessary for adequate quality assurance are included in documents for procurement of items or services. These requirements include the following:

- Scope of Work – The scope of work at all tiers of supply level are adequately defined.
- Technical Requirements – Technical requirements for the items or services to be furnished include or reference the appropriate specifications, codes, standards, and regulations. Test, inspection, and acceptance requirements are identified.
- Right of Access – At each tier of procurement, the procurement documents provide for the right of access to the supplier's plant for inspection. The procurement documents specify events to be witnessed, schedule the hold and witness points, identify minimum advance notice of tests, and means of communication regarding these tests.
- Special Quality Assurance Requirements – Special quality assurance requirements are specified.
- Documentation Requirements – Procurement documents specify the documentation required and establish a submittal schedule.

Project QA shall examine procurement documents to assure the following:

- All applicable requirements of this plan and applicable regulations (i.e., 10 CFR 830.120, NQA-1, 40 CFR Part 260 Series, and/or 10 CFR 71, Subpart H) are addressed.
- The design basis technical requirements including material and component identification requirements, drawings, specifications, codes and industrial standards, tests and inspection requirements, and special process instructions, and inspection, witness, and hold points, as applicable, are addressed.

4.2 RECORDS MANAGEMENT SYSTEM

Documents that support or provide objective evidence of the planning, direction, and accomplishment of project quality-affecting activities should be designated as quality records. Project processes shall assure that documents designated as quality records are uniquely identified, formally accepted and validated, indexed, classified, received, stored, preserved, and dispositioned.

4.2.1 Quality Records

Project procedures shall specify the collection, storage, and retention of QA records associated with the design, procurement, manufacture, delivery, and start-up of quality-affecting systems, components, operations, and services. The quality records process shall be established and implemented to assure that sufficient written records are maintained to furnish evidence of activities affecting quality. These records include but are not limited to design records, records of use, and the results of reviews, in-process assembly and final inspections, packaging and shipping inspections, tests, audits, monitoring of work performance, materials analyses, waste characterization, and related records such as qualifications of personnel, equipment, and procedures for special processes.

Procurement technical specifications shall identify those records to be transmitted to the project for retention by the project and those to be retained by the supplier. The records shall be identified, indexed, and stored in accessible locations. Maintenance of project records shall be in accordance with written approved procedures that address duration of storage, responsibilities for safekeeping, preservation, and disposition of non-permanent records. Maintenance of records at participating organizations is in accordance with their approved program.

4.2.2 Responsibilities

The responsibility for obtaining and maintaining all required QA documentation for the project rests with the Project Manager. The QA Manager establishes guidelines defining the scope of the required QA documentation, as amplified or modified by contract requirements.

4.2.3 Lifetime Records

Lifetime records shall include, as a minimum: design specifications, stress reports or stress calculations, “as built” and interface control drawings, copies of material test reports, tabulation of materials for “as built” configuration, nondestructive examination reports, including examination results and disposition reports, and copies of waste characterization data reports.

4.2.4 Non-permanent Records

All non-permanent records required to verify compliance with the applicable codes and the vendor’s or subcontractor’s Quality Assurance Program shall be maintained until project completion, unless otherwise stipulated.

4.2.5 Record Storage Facilities

Record storage facilities shall be constructed, located and/or secured to prevent destruction of records by fire, flood, theft, and deterioration. As an alternative, duplicate sets of documentation may be maintained in separate locations.

4.3 IMPLEMENTING PROCEDURES

ERG SOP 4.03 Project and QA Records

SECTION 5: WORK PROCESSES

Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

5.1 PROCEDURES AND INSTRUCTIONS

Procedures and instructions shall be prepared, reviewed, approved, and revised for project quality-affecting activities to the level of detail required to ensure that activities can be performed and documented by qualified personnel without direct supervision. Procedures, instructions, and/or drawings provide the method for compliance with the applicable nationally recognized codes, standards, specifications, and/or project-specific requirements. Project activities affecting quality shall be performed and documented in accordance with these procedures and instructions. When applicable, procedures and instructions should include or refer to appropriate qualitative or quantitative performance objectives and acceptance criteria for determining that prescribed activities have been completed as specified. Procedures and instructions shall be uniquely identified, retrievable, reproducible, and have a standardized format.

5.1.1 Quality Assurance Review

The QA Manager, or designee, shall review and approve project procedures, instructions, and drawings to verify inclusion of appropriate quality requirements.

5.1.2 Special Procedures

All special fabrication, installation, and inspection processes that have an effect on the quality of the component, system, or fabrication operations shall be controlled by process procedures. Special process procedures shall be reviewed and approved by the QA Manager to ensure their

adequacy. Process procedures shall include the method, qualification requirements, equipment, and associated control parameters.

5.1.3 Test Procedures

Testing shall be performed in accordance with written and approved procedures, prepared by the cognizant manager and reviewed by the QA Manager, in accordance with standards, procedures, or instructions that include the following quality assurance requirements, as applicable:

- Requirements and acceptance limits as contained in the applicable design documents.
- Detailed instructions for performing the test.
- Calibrated instrumentation.
- Adequate and appropriate equipment.
- Trained, qualified, and as appropriate, licensed and/or certified personnel.
- Preparation, condition, and completeness of the item to be tested.
- Suitable and, if required, controlled environmental conditions.
- Mandatory inspection hold points for witness by responsible individual.
- Acceptance and rejection criteria.
- Method for documenting or recording test data and results.
- Designation of the individual(s) or group(s) responsible for evaluating and making decisions based on test results.

Test procedures shall be subject to document control as outlined in Section 4. They shall be maintained current by revisions issued upon changes in specifications, documentation, drawings, or contracts.

5.1.4 Test Control for Procured Items

Test control requirements shall be imposed on vendors by procurement documents to identify the tests to be performed and to stipulate that the vendor's test procedures be submitted for approval. The vendor's organization shall conduct these tests. Test control systems shall be monitored during Quality Assurance surveillances. Records of tests shall be reviewed for acceptability during surveillances.

5.2 HANDLING, STORAGE, AND SHIPPING

Measures shall be established and implemented to assure that all materials, components, assemblies, spare parts, special tools, and equipment, including packaging for shipment of radioactive or hazardous materials, are handled, stored, packaged and shipped in a manner which prevents damage, loss of identity, or deterioration. These activities shall be carried out in accordance with written approved procedures.

5.2.1 Handling

Material handling equipment shall be designed to preclude damage to both the equipment and its container. If special handling is needed, special requirements such as weights, sling locations,

balance points, methods of attachments, maximum hoist line speeds, and other pertinent features for safe and proper handling shall be identified in procurement and shipping documents, as necessary. Protective measures to preclude handling damage shall be included in the design. Procurement specifications shall indicate necessary requirements for packaging and shipping to prevent damage or deterioration. Items in storage shall be checked periodically by Project QA. Any loss or damage shall be reported as a non-conformance.

5.2.2 Storage

The owner or his agent defines normal storage requirements. If required, crating or any other type of packing should be accomplished prior to storage. A responsible engineer periodically shall survey items that are stored. Any damage or deterioration shall be reported as a non-conformance. When necessary, storage procedures shall address special requirements for environmental protection such as inert gas atmospheres, moisture, temperature levels, etc.

5.2.3 Shipping

Items shall be packaged and shipped in a manner that will prevent damage during transit. Items shall be packaged in accordance with appropriate codes, manufacturer's standards, contractual requirements, and shipping requirements. Procurement documents shall contain relevant shipping instructions and requirements. Items received and inspected at project facilities shall be repackaged in accordance with appropriate requirements for final shipment to the job site. Shipping procedures shall assure that all conditions of the Certificate of Compliance are satisfied prior to delivery of hazardous or radioactive material to a carrier for transport in an approved package. Shipping documentation shall be completed prior to shipping, as required.

5.3 SELF-EVALUATION

Self-evaluation on a project involves determining readiness to begin or continue work and determining the quality of completed work by the individuals and their supervisors immediately responsible for performing the work. Internal design reviews, quality control checks, and other inspections and tests conducted to gain and document immediate confidence in the work are also considered part of the self-evaluation process. Before beginning project quality-affecting activities, cognizant project personnel should perform readiness reviews of prerequisites to assure satisfactory preparation. Readiness reviews performed as self-evaluations should not be confused with safety-related Operational Readiness Reviews which, while similar in method and intent, are performed by personnel not directly associated with the work.

5.4 STANDARDS

Technical and other appropriate standards from external sources may be used to perform project work as designated in planning documents. Administrative controls for the project-specific implementation and documentation of these standards should be detailed in corresponding procedures (see Section 5.1).

5.5 IDENTIFICATION AND CONTROL OF ITEMS

Items that have been specifically designed to project requirements and that require traceability shall be assigned unique identification. Commercially available items that are procured by the project as standard "off-the-shelf" items should have identification requirements included in procurement documents if traceability is to be maintained. Data generated as a result of sampling, characterization, monitoring, or remedial activities shall be identified in the documents and information systems in which they appear. The identification of data shall include the origin of the data (e.g., task, test, experiment, or report) and shall be verified before release for use in order to assure traceability to the source(s). Quality-affecting samples shall have unique identification that trace them to their source(s) and shall be identified and controlled in a manner consistent with their intended use. Physical identification of items shall be used to the maximum extent possible. Identifying markings shall be permanent and legible and not adversely affect the function, service, or archival life of the item. When physical identification on the item is impractical, other methods should be used. Items with finite shelf life shall be controlled and physically identified. Methods for dispositioning items with expired shelf lives should be identified.

5.6 IMPLEMENTING PROCEDURES

ERG Technical Standard Operating Procedures (see Attachment 2 for listing)

SECTION 6: DESIGN

Items and processes shall be designed using sound engineering/scientific principles and appropriate standards. Design work, including changes, shall incorporate appropriate applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be verified or validated by individuals or groups other than those who performed the work. Verification and validation work shall be completed before approval and implementation of the design.

ERG currently does not do design work and will not engage in such work until approved QA procedures are in place.

SECTION 7: PROCUREMENT

Procured items and services shall meet established requirements and perform as specified. Prospective suppliers shall be evaluated and selected on the basis of specified criteria. Processes to ensure that approved suppliers continue to provide acceptable items and services shall be established and implemented.

7.1 PROCUREMENT PLANNING AND PERFORMANCE

The procurement of quality-affecting or safety-related materials, components, or services shall be accomplished by developing procurement specifications and following an orderly process of evaluating available products or services.

7.1.1 Procurement Specifications

Requirements to be met by the vendor shall be detailed in the procurement documents, which may include procurement specifications. Procurement specifications may detail the aspects of vendor quality assurance, for example, inspection reports, provisions for inspection, equipment calibration prior to use, and provisions for inspection after component repair.

7.1.2 Item Identification

Identification requirements for procured items shall be determined during generation of specifications. Identification of materials and parts for quality-affecting or safety-related systems or components shall be traceable to the appropriate documentation, such as drawings, specifications, purchase orders, manufacturing and inspection documents, deviation reports, and physical and chemical test reports.

7.2 SELECTIONS AND ACCEPTANCE OF CONTRACTORS, ITEMS, AND SERVICES

Initial selection and continued qualification of subcontractors, vendors, and suppliers shall be based on an evaluation of their capability to provide items, services, or other products in accordance with the requirements of procurement documents before award of contract. Measures for evaluating and selecting procurement sources and the results thereof shall be documented. Methods for accepting project items or services shall be identified and subsequently incorporated into project contractual agreements, including methods for the disposition of project items and services that do not meet contractual documentation requirements.

The QA Manager shall participate in evaluation of procurement sources. Recommendations of procurement sources shall be based on these evaluations performed prior to contract award. The evaluations shall cover review of capabilities and facilities for technical, manufacturing and quality performance as applicable to the item or service to be procured and include any or all of the following:

- Historical performance data, particularly in product quality and delivery.
- Review and comment on vendor’s quality assurance program.
- Source audits to verify vendor’s implementation of his quality assurance program.
- Source qualification programs.

Actions to correct deficiencies in the vendor's organization or quality program shall be resolved with the vendor's management prior to initiation of work on the ordered items or services.

7.3 IMPLEMENTING PROCEDURES

ERG SOP 4.04 Procurement

SECTION 8: INSPECTION AND ACCEPTANCE TESTING

Inspection and testing of specified items, services, and processes shall be conducted using established acceptance and performance criteria. Equipment used for inspections and tests shall be calibrated and maintained

8.1 INSPECTION

Procedures shall be established and implemented to inspect materials, parts, processes or other activities affecting quality to verify conformance with documented instructions, procedures, specifications, drawings, or procurement documents. Inspections shall be performed in accordance with approved, written instructions and procedures that address the following as applicable:

- Acceptance criteria.
- The characteristics and activities to be inspected.
- The individuals responsible for performance of the inspection operations.
- The method of inspection.

When direct inspection is not possible, provisions are established for indirect control by monitoring processing methods, equipment and personnel. Modifications and/or repairs to and replacements of quality-affecting or safety-related components or equipment shall be inspected in accordance with the original design and inspection requirements or acceptable alternatives.

8.2 TEST CONTROL

Testing activities should be planned and documented by assigned personnel before commencing such work. Test planning should establish the activity characteristics to be verified. Planning should include or refer to test objectives and should assure that proper instrumentation is available and used, that necessary monitoring is performed, and that suitable environmental conditions are maintained to avoid degradation of the test item. Assigned personnel should conduct test activities in accordance with established testing methods. Personnel should assure that proper environmental conditions are maintained and that any deviations or nonconformances that may occur during tests are properly documented. Test results should be documented and evaluated by responsible personnel to assure that test requirements have been met. Modifications, repairs, and replacements shall be tested in accordance with the original design and test requirements or acceptable alternatives approved in the same manner as the original. Records of tests performed shall be prepared, showing the applicable drawing or procedure

revision, identification of test performed, date, test data, and other essential test information. The test record shall be signed by the individual performing the test and any test witness, if so required. Test records shall be retained, as quality records if applicable.

8.3 INSPECTION, TEST, AND OPERATING STATUS

The use of physical status indicators is necessary to assure that operations, support, and experimental activities important to quality, ES&H, and security are properly controlled. The status of inspection and test activities shall be identified, either on the items or in documents traceable to the items if necessary, to assure that required inspections and tests are performed and that failed items are not inadvertently used.

The inspection, test and operating status of systems and components used for quality-affecting or safety-related operations shall be known at all times. Operating personnel who are responsible for critical inspection, test and operating activities will maintain equipment status. QA personnel shall verify equipment status and compliance with procedures.

8.4 CONTROL OF EQUIPMENT FOR MEASURING AND TESTING

Equipment selection and procurement processes shall assure that such items are of proper type, range, accuracy, and tolerance to determine conformance to specified requirements that control any work process parameter that influences the quality of an item or process. Equipment should be identified through controlled inventory and physical marking with unique status identification. An equipment inventory shall be maintained.

When measuring and test equipment is found to be out of calibration, measures are taken and documented to determine the validity of inspections performed during the period the equipment was out of calibration. The complete status of all measuring and test equipment under the calibration system is recorded and maintained. Operational checks shall be performed on test equipment, as required, to assure that the equipment is still functioning properly prior to actual testing.

8.5 EQUIPMENT CALIBRATION

Equipment shall be calibrated, adjusted, and maintained at prescribed intervals against certified equipment having known valid relationships to nationally recognized standards such as the National Institute for Standards and Technology (NIST). The calibration of radiation detection instrumentation shall conform to ANSI N323-1978. If no nationally recognized standards exist, the basis for calibration shall be documented. All calibrations shall be performed in accordance with approved written procedures. Measuring and test equipment shall be identified and traceable to the calibration records and shall be labeled or tagged to indicate the next required calibration date. Equipment past its next date of calibration shall be removed from service, tagged, and segregated, if possible. If during recalibration, equipment is found to be out of calibration, it shall be immediately removed from service, tagged, and segregated, if possible. An evaluation to determine the effect and significance of the use of suspect data shall be

performed and documented. If the evaluation discloses an adverse effect on items, work, or data previously accepted, appropriate corrective action shall be taken.

8.6 IMPLEMENTING PROCEDURES

ERG Technical Standard Operating Procedures, as required (See Attachment 2 for listing).
ERG SOP 4.04 Procurement

SECTION 9: MANAGEMENT ASSESSMENT

Managers shall assess their management processes. Problems that hinder the organization from achieving its objectives shall be identified and corrected.

9.1 MANAGEMENT ASSESSMENT

The operations and project manager shall perform project management assessments. Management assessments shall focus on how well the project QA program is working by evaluating the appropriateness and effectiveness of its controls. Management assessments shall be performed periodically or as a needed. Management assessments should not be strict compliance checks. They should augment internal verification and self-evaluation practices and independent assessments by taking an overall look at the entire project QA program. Management assessments should focus on:

- Managerial effectiveness in establishing and implementing the QA program and achieving quality improvement, including the identification of management impediments and problems that may hinder effectiveness in meeting objectives.
- Adequacy of resources and personnel devoted to developing, implementing, and verifying the QA program.
- Effectiveness of established processes and activities in achieving and assessing requisite quality.
- Degree of success in meeting management objectives.
- Implementation of recommendations from past management assessments and independent assessments.

Management personnel shall gather data necessary to make effectiveness determinations, formally report on their conclusions, and take appropriate actions to address identified concerns and problems.

9.2 IMPLEMENTING PROCEDURE

ERG SOP 4.05 Audits

SECTION 10: INDEPENDENT ASSESSMENT

Independent assessments shall be planned and conducted to measure item and service quality, to measure the adequacy of work performance, and to promote improvement. The group performing independent assessments shall have sufficient authority and freedom from the line to carry out its responsibilities. Persons conducting independent assessments shall be technically qualified and knowledgeable in the areas assessed.

10.1 INDEPENDENCE AND RESPONSIBILITY

Independent assessments are formal project evaluations conducted by qualified personnel, free of responsibility in the areas they assess. The QA manager is responsible for coordinating independent assessments, as requested or regularly scheduled by clients, regulators, or other sources. Clients and regulators may conduct assessments of the project to their own specifications.

Project or corporate independent assessments of the project or a vendor shall provide comprehensive, independent verification and evaluation of the project or vendor activity being assessed and should focus on assisting project management in improving quality. The assessment scope shall encompass evaluation of quality system practices and/or procedures and the effectiveness of their implementation, monitoring of operations and activities, and a review of pertinent documents and their control and maintenance. These assessments should consider:

- The intended function of an item, system, or process.
- Attributes required to perform these functions.
- Processes or activities that impart these attributes.
- Degree of success in meeting acceptance criteria and performance objectives.
- Areas of previously identified concern.

Checklists shall be prepared prior to conducting an assessment.

10.2 SELECTION AND QUALIFICATION OF INDEPENDENT ASSESSMENT PERSONNEL

Independent QA and technical professionals shall conduct the assessments. They shall be familiar with the programmatic elements and requirements of the project QA program and experienced in assessment practices. In addition, the team leader shall be certified as qualified independent assessment team leader by their management. Instruction in planning, conducting,

and reporting independent assessments shall be provided to these personnel, as necessary, by the assessment team leader, in coordination with the QA manager. The makeup of an assessment team should be commensurate with the scope and time frame of the assessment.

10.3 ASSESSMENT FREQUENCY AND SCHEDULE

Internal independent assessments normally shall be conducted at least once every 12 months for continuing projects. However, unscheduled audits may be performed more frequently in specific areas, if deemed necessary by Project QA and/or when the need is indicated by the existence of chronic problems. Independent assessments shall be requested by the Project Manager and scheduled in consultation with the QA Manager. Assessments shall be based on the following considerations:

- How well the project QA program meets regulatory and other requirements.
- The activity's relative impact and importance to project objectives.
- Past independent assessment scope, frequency, and results.
- Past results of other project and external assessments, audits, or reviews.
- Availability of personnel, budget, and other resources.

10.4 ASSESSMENT PLANNING, ACCOMPLISHMENT, REPORTING, AND FOLLOW-UP

A documented plan that identifies the subject(s), dates, and schedules, assessment methods, assessment team members, and other necessary information shall be prepared by the assessment team leader and distributed to affected project personnel before the scheduled performance date. Independent assessment teams shall conduct and document assessments as scheduled and planned using accepted quality assurance techniques, including checklists. The project manager shall provide team access to necessary personnel, work areas, and resources. Results of investigations shall be discussed with responsible personnel at the time of identification and at the conclusion of the assessment.

Upon completion of the assessment, the team leader shall provide project management with a verbal description of the team’s findings, conclusions, and quality improvement recommendations (if any) at a closeout meeting. As soon thereafter as possible, the team leader shall prepare a report detailing the results of the assessment provided at the closeout meeting. The Project Manager shall assign cognizant project management personnel, at the level necessary to effect change, to develop and document reported corrective actions and quality improvement actions. The assigned project management personnel shall evaluate each report item and correct deficiencies as promptly as possible. The assessment team leader or a designated alternate shall follow any open finding until action is taken by the project to satisfy the finding. Follow-up actions shall be taken to verify corrective actions are implemented and effective.

10.5 IMPLEMENTING PROCEDURES

ERG SOP 4.05 Audits

ATTACHMENT 1

ERG PROCEDURES

STANDARD OPERATING PROCEDURE 4.01

TRAINING, INDOCTRINATION, AND CERTIFYING PERSONNEL

1. PURPOSE

To describe the procedures for training, indoctrination, and certification of personnel.

2. DISCUSSION

This procedure supports the ERG QA Plan.

3. PROCEDURE

3.1 Position Requirements and Selection.

3.1.1 Management shall define the minimum educational, experience, and other qualification requirements for positions involved in the performance of project quality-affecting activities

3.2 Orientation and Training

3.2.1 Management shall assure that all personnel performing activities affecting quality are trained and indoctrinated as to the purpose, scope, and proper implementation of the QA plan. The specific QA requirements and task procedures to assure proficiency shall be emphasized. Documentation of training shall be done and placed in the project file.

3.2.2 Management shall assure that general and project-specific environment, safety, and health (ES&H) training shall be given to all personnel. Documentation of training shall be done and placed in the project file

3.2.3 The QA Manager is responsible for assuring that this orientation and training occurs prior to quality-affecting work begins.

3.3 Personal Certification

3.3.1 Personnel responsible for performance, inspection, and control of certain special processes and operations that require special skills and have an effect upon quality shall be certified. Confirmation of adequate training shall be documented through written exams, oral exams, task performance demonstrations, or other means. A record of the names of certified personnel, their skills, and certification periods shall be maintained in the project files.

3.4 Proficiency Evaluation

3.4.1 Immediate supervisors shall continuously monitor (maintain awareness of) personnel proficiency in understanding their job requirements, competently performing their assigned quality-affecting tasks, and progressively improving their capabilities. Formal evaluation of proficiency should be documented as part of the usual performance appraisal process. If an

individual's level of proficiency is unsatisfactory, project supervisors should, in addition to standard personnel actions, suspend the applicable job task, counsel the individual, and assign appropriate training or professional development.

4. TRAINING

4.1 Not applicable.

5. RECORDS

5.1 Records of the completed work, measurements, calculations, and data must be preserved, protected, and retained according to the contract and/or ERG's record retention process (see SOP 4.3)

5.2 Computer generated files will be saved as print and electronic files and stored with field notebooks.

6. REFERENCES

6.1 Project personnel using this procedure should become familiar with the contents of the following documents:

SOP 4.3

7. ATTACHMENTS

None.

Author's Signature:	**Reviewed By:**
Charles P. Farr	Kenneth R Baker

STANDARD OPERATING PROCEDURE 4.02
NONCONFORMANCE AND CORRECTIVE ACTION

8. PURPOSE

To describe the procedures for handling nonconformance items and corrective actions

9. DISCUSSION

This procedure shall be used for managing quality-affecting nonconformance items and corrective actions.

10. PROCEDURE

10.1 Identifying Nonconformance Items.

10.1.1 Project management is responsible for identifying quality-affecting items and services that do not conform to specifications or other procurement contract requirements. Items shall be tagged as nonconforming and held until proper resolution. If another contractor or vendor is involved, immediately notify Accounts Payable of the action and withhold payment in accordance with contract provisions. The first portion of ERG Nonconformance Form 4.02A shall be used to document this action. The QA Manager shall be advised of the nonconformance and subsequent actions

10.2 Documenting Corrective Action

10.2.1 Project management shall provide nonconformance data or information to the appropriate group, vendor, or contractor. A record of the resolution of the nonconformance shall be retained.

10.2.2 After the item or service has been repaired or reworked, an inspection shall be done to assure that it conforms to the original specifications.

10.2.3 Disposition of the nonconforming item or service shall be documented

11. TRAINING

11.1 Not applicable.

12. RECORDS

12.1 Records of the completed work, measurements, calculations, and data must be preserved, protected, and retained according to the contract and/or ERG's record retention process (see SOP 4.03)

12.2 Computer generated files will be saved as print and electronic files and stored with field notebooks.

13. REFERENCES

13.1 Project personnel using this procedure should become familiar with the contents of the following documents:

SOP 4.03

14. ATTACHMENTS

14.1 None.

Author's Signature:	Reviewed By:
Charles P. Farr	Kenneth R Baker

STANDARD OPERATING PROCEDURE 4.03
PROJECT AND QUALITY ASSURANCE RECORDS

15. PURPOSE

The purpose of this Standard Operating Procedure is to describe the procedures for maintaining project and quality assurance (QA) records.

16. DISCUSSION

This procedure shall be used for managing all quality-affecting project records, including contracts, statements of work, environmental health and safety records, instrument calibrations, field function check forms, project notes, and draft and final reports.

The Operations Manager is responsible for assuring that adequate space and resources are available for project files and that the files are archived for required length of time.

The Project Manager is responsible for establishing and maintaining project files in accordance with ERG standard filing format.

The QA Manager is responsible for auditing the files as part of the project quality audit.

17. PROCEDURE

17.1 Project Manager's Duties

17.1.1 The Project Manager shall, upon award of a contract, establish the file requirements and develop the Subject Matter File Index for managing all quality-affecting project records. Copies of calibration and other data sheets normally taken to the field shall be placed in the file. Field data shall be collected as soon as practical and placed in the files to prevent loss.

17.1.2 The Project Manager shall review the record requirements and data needs with project staff at the Project Opening Meeting (SOP 4.06). Lists are encouraged as a way to assure proper data collection and management.

17.1.3 The Project Manager is responsible for preparing the project files for archiving by culling unneeded material and assuring that the files are complete

17.2 Field Team Leader's Duties

17.2.1 Assure that all requirements are understood.

17.2.2 Assure that employees are adequately trained and supervised.

17.2.3 Assure that SOPs are understood and used for all quality related tasks.

17.2.4 Make copies of data for the project files at frequent intervals.

17.2.5 Never transport single-copy files without copies in another location

17.2.6 Assure that electronic files are managed in the same manner as hard-copy files.

18. TRAINING

None

19. RECORDS

None

20. REFERENCES

SOP 4.06

Form 4.00 Training Qualification Form

21. ATTACHMENTS

None

Author's Signature:	**Reviewed By:**
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STANDARD OPERATING PROCEDURE 4.04
PROCUREMENT

22. PURPOSE

This procedure describes the procurement process for quality-related goods and services

23. DISCUSSION

This procedure shall be used for procuring all quality-related products or services. In cases where ERG has procurement requirements in contracts, these requirements and the additional contractual requirements will be followed. Contractual requirements will take precedent over these requirements where conflicts exist.

The Operations Manager is responsible for approving all quality-related purchases and assuring conformance with this procedure

24. PROCEDURE

Procurement specifications shall be prepared for the purchase of all quality-related items.

Requests for Bids shall be made for items and services unless a sole-source justification can be made. The Operations Manager must approve all Requests for Bids prior to submittal.

Upon receipt of products, an inspection must be made in accordance with SOP 4.02, Nonconformance and Corrective Actions.

The Operations Manager must approve the payment of all invoices in writing

25. TRAINING

Not applicable.

26. RECORDS

26.1 Records of the completed work, measurements, calculations, and data must be preserved, protected, and retained according to the contract and/or ERG's record retention process (see SOP 4.3)

26.2 Computer generated files will be saved as print and electronic files and stored with field notebooks.

27. REFERENCES

27.1 Project personnel using this procedure should become familiar with the contents of the following documents:

SOP 4.02

28. ATTACHMENTS

None.

Author's Signature:	**Reviewed By:**
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STANDARD OPERATING PROCEDURE 4.05

AUDITS

29. PURPOSE

This procedure describes the audit process.

30. DISCUSSION

This procedure shall be used as guidance in preparing audits of company management, projects, or other work-related organizations. The guidance relates to both internal assessments as well as independent assessments (external audits). Internal assessments may be less formal with less emphasis on formal evidence gathering and documentation.

Company Management is responsible for assuring that audits are performed to meet contract requirements and to satisfy the quality needs of the company. The QA Manager is responsible for assuring that the audits are performed according to company policy

31. PROCEDURE

31.1 Planning.

31.1.1 The auditor (or audit team) shall meet with the QA Manager to clearly define the goals and scope of the audit. Auditors will be selected that are familiar with the programmatic requirements and audit process. For technical audits, the auditors may also include technical specialists. Auditors for independent assessments shall truly be independent of the organization being audited.

31.1.2 Adequate information should be obtained for study by the auditors in order to gain a familiarity with the processes and quality requirements. An audit plan will be prepared showing participants, organizations, and schedule. This plan will be reviewed and agreed to by the QA Manager. The plan may include check lists.

31.2 Audit

31.2.1 The audit shall be conducted according to the plan. The auditor shall expect that compliance will be demonstrated by adequate documentation or other physical evidence.

31.2.2 Audit notes should be carefully taken to support the preparation of the audit report.

31.2.3 The audit team should convene a meeting where adequate time is allowed to prepare draft audit findings. These findings should be presented to management at the end of the audit

and prior to preparation of the audit report. Revisions to the draft findings may be considered if additional information is provided on which to make a change.

31.2.4 A final written audit report shall be prepared in a timely manner

31.3 Follow-Up

31.3.1 The organization being audited shall prepare a written response to the findings and commit to a corrective action and a completion date. These corrective actions may be the subject of a follow-up audit or may be included as topics on a regularly scheduled audit.

32. TRAINING

Not Applicable.

33. RECORDS

33.1 Records of the completed work, measurements, calculations, and data must be preserved, protected, and retained according to the contract and/or ERG's record retention process (see SOP 4.3)

33.2 Computer generated files will be saved as print and electronic files and stored with field notebooks.

34. REFERENCES

34.1 Project personnel using this procedure should become familiar with the contents of the following documents:

SOP 4.03

35. ATTACHMENTS

None.

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ATTACHMENT 2

LIST OF ERG TECHNICAL STANDARD OPERATING PROCEDURES

Series 1 Equipment Calibration and Setup

1.01 Calibration of Scaler, Ratemeter
1.02 Pancake Detector Calibration and Checkout
1.03 Alpha Scintillation Detector Calibration and Checkout
1.04 High Energy Gamma Scintillation Calibration and Checkout
1.05 Beta Scintillation Detector Calibration and Checkout
1.06 Gamma-Ray Spectroscopy Setup and Calibration
1.07 FIDLER Scintillation Detector Calibration and Checkout
1.08 NO LONGER USED
1.09 Alpha and Alpha-Beta Scintillation Tray Counter Calibration and Checkout
1.10 Gamma-Ray Spectroscopy Setup and Calibration Using MicroNOMAD
1.11 Gas Proportional Detector Calibration and Checkout
1.12 Dual Channel Scintillation Detector Calibration and Checkout
1.13 PIC Setup and Operation
1.20 Calibration of RAS-1 Intermediate Volume Air Sampler
1.21 Calibration of MSA Personal Lapel Air Sampler
1.22 Calibration of MSA ELF Personal Lapel Air Sampler
1.23 Radon Daughter Working Level Measurements
1.24 Thoron Daughter Working Level Measurements
1.30 Function Check of Equipment

Series 2 Project Related Tasks

2.01 Monitoring of Trucks for DOT Compliance
2.02 General Equipment Decontamination
2.03 Personal, Environmental, and Work Area Sampling
2.04 Monitoring of Rail Cars for DOT Compliance
2.05 Personal Access-Egress into Radiologically Controlled Areas
2.06 Radiation Work Permit
2.07 Radon Flux Canister Deployment
2.08 Monitoring for Ra-226 in Surface Soils using a gamma scintillation detector
2.09 Gamma-Radiation Correlation Studies
2.10 NO LONGER USED
2.11 Exposure Rate Survey
2.12 Monitoring Equipment for Access and Unconditional Release
2.13 External Dosimetry Procedure
2.14 Respiratory Protection Program
2.15 Sample Control and Documentation
2.16 Total Surface Contamination Measurements
2.17 Sampling for Removable Surface Contamination
2.18 Posting Requirements for Radiologically Restricted Areas
2.20 Sampling of Liquids and Solids
2.21 Sampling High-Efficiency Particulate Air Filters
2.22 Surface and Shallow Subsurface Soil Sampling
2.23 Vegetation Sampling

Series 4 Quality Assurance and Project Management

4.01 Training, Indoctrination, and Certifying Personnel
4.02 Noncomformance and Corrective Action
4.03 Project and QA Records
4.04 Procurement
4.05 Audits
4.06 Project Management
4.07 Project Logbook Guidelines
4.10 Technical Quality Control
4.12 Soil Data Validation

Series 5 GIS and Survey Systems

5.01 GIS-GPS Data and File Management
5.02 Creating Isometric and Data Contour Maps
5.03 Creating Grid Block Data
5.04 Creating Polygon Statistics of Survey Data
5.05 Creating, Uploading, and Navigating to Waypoints
5.06 Creating, Uploading, and Navigating to Shapefiles
5.11 Setup and Operation of Trimble Pro XRS GPS Receiver with Trimble TSCe Datalogger
5.12 Download, Correction, and Export of GPS Survey Data
5.13 Performing GPS Radiological Survey By Vehicle
5.14 Performing GPS Radiological Survey By Baby Jogger Pushcart
5.21 Setup and Operation of ERG 3-DISS
5.22 Setup of 3DISS Wireless Network
5.23 Configuration of Wireless Components (3-DISS)
5.24 Setting Up a 3DISS Survey
5.25 Setup and Operation of Remotely Operated Survey System (ROSS)
5.31 Setup and Operation of ERG RadMap System
5.32 Setup and Operation of ERG RadMap System in 2-D Mode